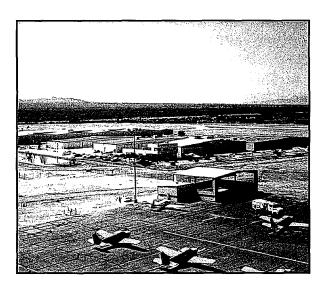


Chapter One

INVENTORY

INVENTORY



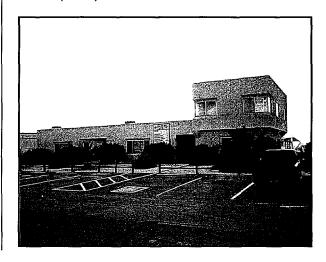


The preparation of an airport master plan begins with assembling information pertaining to the airport and the area the airport serves. In the case of Ryan Airfield, this involves revisiting and updating the inventory data for changes since the previous Master Plan.

The inventory includes an examination of the existing airport facilities, area airspace, and air traffic control, as well as an update of the airport's development history. In addition background information regarding the Tucson area is updated. This includes descriptions of the airport's setting in regional and national aviation systems, the regional climatology, surface transportation, as well as a review of other area planning and development efforts that might affect the master plan update.

The information in this chapter attempts to provide a foundation, or starting point, for the subsequent chapters. It is essential to the success of the master plan update that the inventory be complete and accurate, since the findings and assumptions made in this plan are dependent upon the information collected concerning the airport and the area it serves.

The information outlined in this chapter was obtained through on-site inspections, interviews with airport staff, airport tenants, and representatives of Pima County Planning, the Arizona Department of Transportation (ADOT), and the Federal Aviation Administration (FAA). Information was also obtained from available documents concerning the airport and the Tucson area, including the previous **Airport Master Plan** (1990).



AIRPORT SETTING

Ryan Airfield is a general aviation reliever airport situated in unincorporated Pima County 10 miles southwest of Tucson. The airport is located immediately north of the junction of Valencia Road and the Tucson-Ajo Highway (State Route 86).

Rvan Airfield is owned by the City of Tucson and is operated by the Tucson Airport Authority. It presently encompasses 1,555 acres at an elevation of 2,415 feet above mean sea level (MSL). The airport is one of three publicly-owned airports in the Tucson metropolitan area. The other two are Tucson International Airport and Avra Valley Airport. Tucson International Airport is located on the south side of the metropolitan area and serves as the area's commercial service airport. Avra Valley Airport is a general aviation airport located on the northwest side of the metropolitan area.

The National Plan of Integrated Airport Systems (NPIAS), as established by the Federal Aviation Administration (FAA). identifies the 3,660 airports that are important to national transportation. Rvan Airfield is identified as a general aviation reliever airport. Reliever airports are designated to provide general aviation pilots with attractive alternative to using congested hub airports. There are approximately 290 reliever airports in the nation. Ryan Airfield is one of eight reliever airports in Arizona and is joined by Avra Valley as the only two reliever airports for Tucson International Airport and one of five airports open to general aviation use in the Tucson regional airport system. **Exhibit 1A** depicts the airport in its regional and national setting.

AIRPORT HISTORY

Ryan Airfield had its beginnings during World War II as the Federal government began to realize a need for a large number of trained pilots. The San Diego-based Ryan School of Aeronautics was one of several civilian flight schools contracted to train Army fliers. With the fear of coastal attack spurred by Pearl Harbor, inland training sites were preferred, and Arizona's clear weather was ideal.

From a June 15, 1942 groundbreaking, the open desert 13 miles southwest of Tucson was transformed into an Army airfield in just three months. The Ryan School of Aeronautics came complete with paved runways, apron, hangars, barracks, mess hall, maintenance shop classrooms, offices, a PX, and recreational facilities. A full four month course of flight instruction was compressed to nine weeks as Ryan graduated 6,000 pilots in two years of operation before the school was closed on September 5, 1944.

At the end of World War II, the United States government was left with numerous surplus airports which were transferred to state and local jurisdictions under the War Surplus Property Act of 1944. Ryan Airfield, including all improvements, was transferred to the state of Arizona on October 4, 1948.

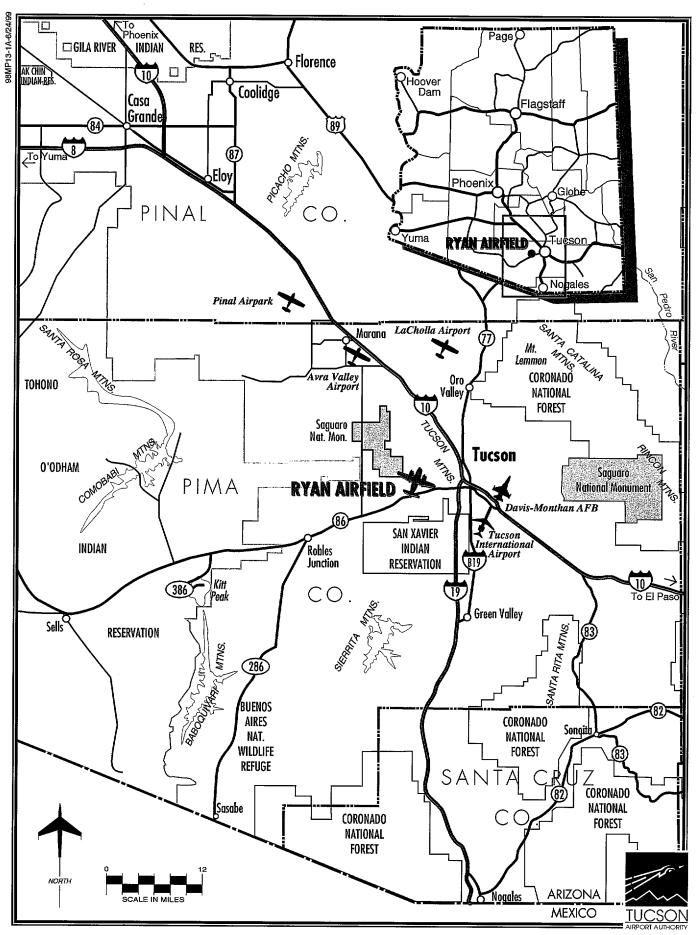


Exhibit 1A LOCATION MAP

On August 1, 1951, the State executed a 10-year lease agreement with the Tucson Airport Authority for the 906 acre airport, ending a six year period of dormancy. Within three weeks of operation, five buildings were leased to two tenants. The original agreement, however, proved to be a barrier to development because prospective tenants would not finance any improvements based upon the short term of the lease. In 1954, a new 99year lease was executed. The State ultimately transferred ownership of the airport by quit claim deed to the City of Tucson on December 16, 1960. The lease with the Airport Authority remained in effect.

Since that time, Ryan Airfield has experienced a significant expansion of general aviation facilities. This has included the extension of the primary runway from 4,000 feet to 5,500 feet in 1982-1983; the installation of a permanent air traffic control tower (ATCT) in 1993; the construction of a 4,900 foot-long parallel runway in 1993. **Table 1A** summarizes the various development grants that Ryan Airfield has received over the past 25 years.

AIRPORT ADMINISTRATION

The Tucson Airport Authority (TAA) is charged with the management and operation of Ryan Airfield, under an agreement with the City of Tucson. Under a separate agreement, the TAA also manages Tucson International Airport.

The Tucson Airport Authority is a nonprofit corporation created by state charter in 1948. It is a volunteer organization composed of 115 residents of Pima County. Any resident of Pima County is eligible for membership on the TAA. The TAA Nominating Council reviews applications and presents a slate of new members for approval to the full membership at the annual meeting.

The Authority membership also elects its board of directors. The nine-member Board of Directors serves staggered three year terms and annually elects its officers. Most Board members are also chair of one of the Authority's twelve councils. Ad hoc councils are also established periodically to address specific needs.

The Authority's Chief Executive Officer (CEO) employs a staff of 260 people to oversee the day-to-day operations of Tucson International Airport and Ryan Airfield.

CLIMATE

Weather conditions play an important role in the operational capabilities and development planning of an airport. Temperature is an important factor in determining runway length requirements. Wind speed and direction can affect the operational flow and capacity of a runway system. The percent of time visibility is impaired is a factor in planning for instrument approach aids.

TABLE 1A Airport Development Grants Ryan Airfield

Year	Improvement	FAA/ ADOT	Grant Amount
1973	Pave and Mark Runway 6-24 (4,000 ft.).	FAA	\$58,602
1974	Land Acquisition, 160 acres, Approach End of Runway 6.	ADOT	\$9,020
1975	Runway 16-34 and Taxiway B Excavate, Drain and Culvert; Taxiway 1 Excavate, Drain, Culvert, and Surface.	ADOT	\$67,000
1979	Utilities to General Aviation Area.	ADOT	\$67,000
1980	General Aviation Parking Apron.	ADOT	\$108,000
1981	Utilities to Terminal Building.	ADOT	\$73,305
1982	Surface Runway 6-24, Extend Runway 6-24 (1,500 ft.).	ADOT	\$360,000
1983	Extend Runway 6-24 1,500 ft.; Porous Friction Course Overlay Runway 6-24; MIRL; Holding Apron; Terminal Taxiway; Relocate Septic.	FAA	\$510,768
1986	Automatic Weather Observation System I (AWOS - I).	FAA	\$44,902
1987	Seal Coat Taxiway A, 1, 2, 3; General Aviation Ramp and Entrance Road.	FAA	\$149,793
1987	Surface Taxiway A and Apron; Grade, Drain and Surface Taxiway Extension.	ADOT	\$224,974
1988	Fire Protection, Entrance Road.	ADOT	\$9,400
1988	Slurry Seal Runway 6-24 Shoulders; Rip Rap Drain and Pave Service Road; Overlay Entrance Road; Curb Entrance Road, Light Entrance Road, Rehabilitate Taxiway 2; add Voice NOTAM to AWOS.	FAA	\$414,323
1988	Airport Master Plan, Environmental Assessment; and Part 150 Noise Compatibility Study.	FAA	\$159,355
1990	Land Acquisition, Resident Relocation, Obstruction Removal	ADOT	\$315,000
1990	Construct and Mark Runway 6L-24R	FAA	\$800,000
1991	Grade, Drain and Surface Runways, Taxiways, and Aprons	ADOT	\$423,000
1991	Land Acquisition, Resident Relocation, Obstruction Removal, Surface Taxiways and Aprons	ADOT	\$432,000
1991	Land Acquisition, Resident Relocation, Obstruction Removal	FAA	\$878,000

TABLE 1A (Continued) Airport Development Grants Ryan Airfield

Year	Improvement	FAA/ ADOT	Grant Amount
1992	Grade, Drain and Surface Runway 6L-24R and Taxiway, Land Acquisition, Resident Relocation, Obstruction Removal, Utility and Drainage	ADOT	\$369,764
1993	AWOS, Detention Basin, Grade, Drain and Surface Taxiway, Land Acquisition, Resident Relocation, Obstruction Removal	ADOT	\$500,000
1993	Land Acquisition, Resident Relocation, Obstruction Removal	FAA	\$1,000,000
1993	Land Acquisition, Resident Relocation, Obstruction Removal	FAA	\$1,000,000
1994	Land Acquisition, Resident Relocation, Obstruction Removal, Grade, Drain, and Surface Wings Parking Apron, Comprehensive Sewer Study	ADOT	\$500,000
1994	Grade, Drain, and Surface Runway 15/33, Taxiway Reconstruction, Detention Basin, Land Acquisition, Resident Relocation, Obstruction Removal	ADOT	\$450,911
1996	Land Acquisition, Resident Relocation, Obstruction Removal	ADOT	\$49,089
1996	Land Acquisition, Resident Relocation, Obstruction Removal	ADOT	\$500,000
1996	Land Acquisition, Resident Relocation, Obstruction Removal	ADOT	\$965,000
1997	Land Acquisition, Resident Relocation, Obstruction Removal	FAA	\$1,000,000
1997	Grade, Drain, and Surface Runway 15-33, Service Road, Storm Water Structural Improvements, Site Preparation for GA Development, Upgrade Water System for Fire Protection	ADOT	\$980,000
1998	Master Plan Update/Part 150 Noise Compatibility Study	ADOT	\$150,000
1998	Surface Runway 6R-24L Vehicle Crossover, Drainage/Erosion Control, Design Only	ADOT	\$131,150
1998	Surface Runway 15-33	ADOT	\$844,000

The sun shines in Tucson 86 percent of the daytime hours. VFR (visual flight rules) conditions are in effect over 99 percent of the time at Ryan Airfield. Rainfall averages just 12 inches per year, with approximately half of that occurring from July though September. Temperatures typically range from average highs of 99 degrees F in June and July to lows of 39 degrees F in December and January. The average annual wind speed in Tucson is 8.3 miles per hour. The strongest winds typically come out of the southwest.

AIRPORT FACILITIES

The facilities at an airport can be divided into two basic areas. The airfield includes facilities directly related to the movement of aircraft. This includes runways, taxiways, lighting, and navigational aids.

Terminal area facilities are made up of aircraft parking storage as well as landside support facilities. **Exhibit 1B** depicts the existing facilities and the following subsections describe the existing airfield and terminal area facilities at Ryan Airfield.

AIRFIELD FACILITIES

Runways

The runway system at Ryan Airfield includes two parallel and one crosswind runway. Runway 6R-24L is the airport's longest runway at 5,500 feet by 75 feet wide. This runway is constructed of asphaltic concrete (AC) with a porous friction course (PFC) surface, and is strength-rated at 12,500

pounds single wheel loading (SWL) and 30,000 pounds dual wheel loading (DWL). A May 1997 pavement management study rated the pavement condition of Runway 6R-24L as very poor. The runway is scheduled for overlay in 1999.

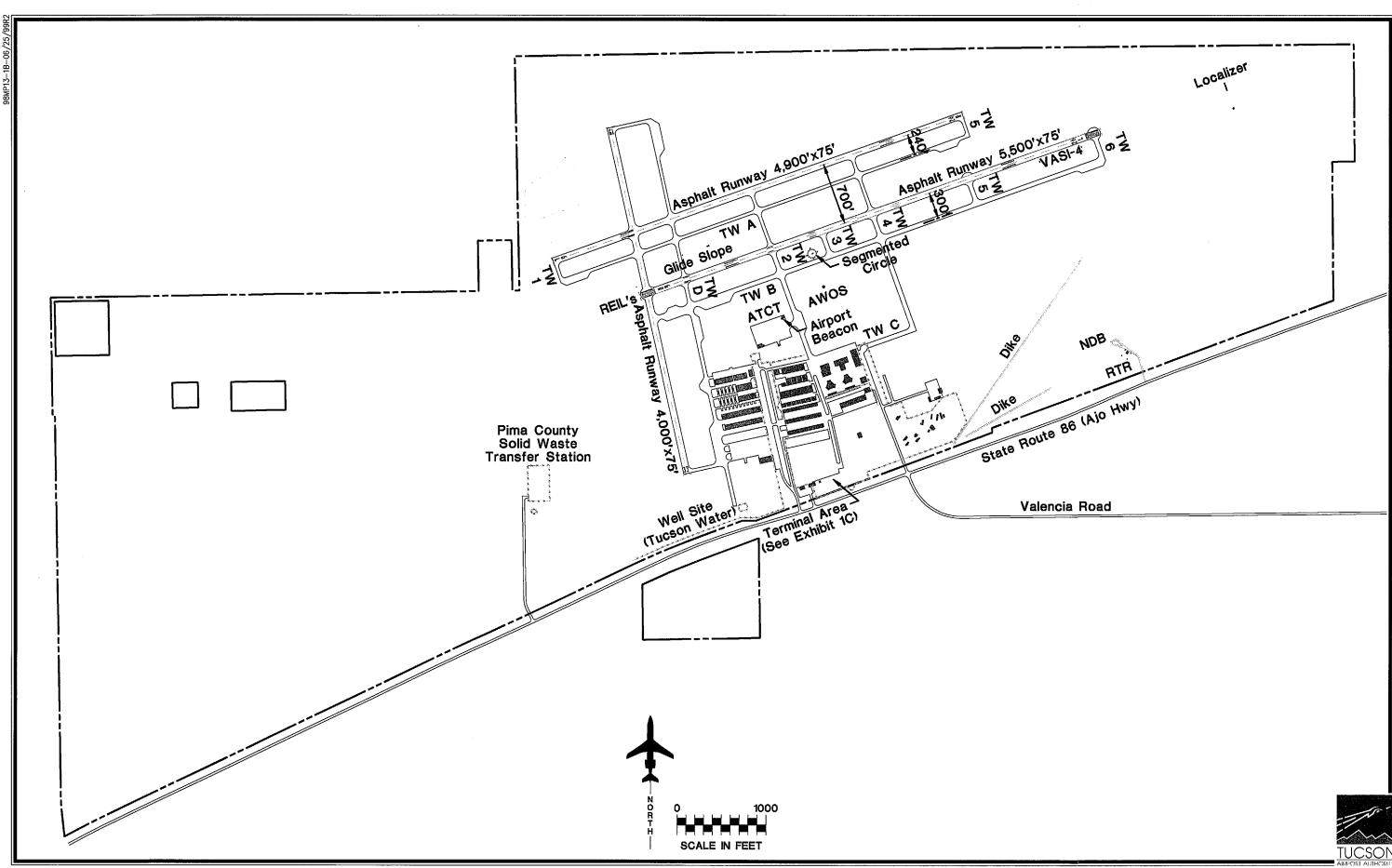
Parallel Runway 6L-24R is 4,900 feet long and 75 feet wide. The centerline of this runway is 700 feet north of the centerline of Runway 6R-24L. Runway 6L-24R is constructed of asphaltic concrete and is also strength-rated at 12,500 pounds SWL and 30,000 pounds DWL. The runway was constructed in 1993 and was rated in very good condition by the 1997 pavement management study.

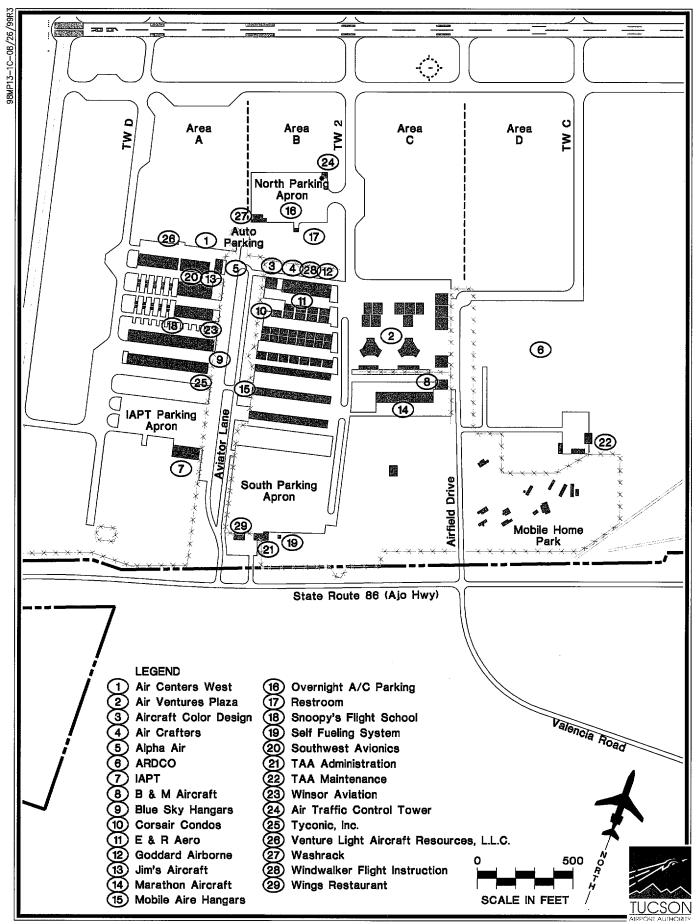
Crosswind Runway 15-33 is presently a dirt runway 3,535 feet long and 75 feet wide. The runway is scheduled for to be paved in 1999 to 4,000 feet by 75 feet with a pavement strength of 12,500 pounds. **Table 1B** summarizes the runway data.

Taxiways

The Ryan Airfield taxiway system includes a series of parallel, entrance/exit, connecting, and access taxiways. The taxiways provide access to all developed areas on the airport. All the taxiways are constructed of asphaltic concrete.

Taxiway A (Alpha) is a full length parallel taxiway for Runway 6L-24R. Located between the parallel runways, Taxiway A is 240 feet from the Runway 6L-24R centerline. The taxiway is 35 feet wide and is rated in good condition. There are holding aprons located near





each end of Taxiway A. Exit Taxiways B1 and B5 are located at the west and east ends of Taxiway A to provide

access to the runway's thresholds. Each are 35 feet wide and in good condition.

TABLE 1B Runway Data Ryan Airfield								
	RUNWAY							
	6R-24L 6L-24R 15-33				-33			
Length (ft.) Width (ft.) Pavement	1	500 75		000 5	3,5 7			
Material Condition Load Bearing Capacity		halt Poor	Asphalt Very Good		i	irt /A		
SWL (lbs.) DWL (lbs.) Runway Lighting	12,500 30,000 MIRL		12,500 30,000 N		N/A N/A N			
Runway Marking Traffic Pattern Approach Aids VASI REIL ILS NDB/DME GPS	Prec. Left N Y Y Y Y	Nonprec. Left V-4 N N *	Basic Left N N N *	Basic Left N N N *	Turf Left N N N *	Turf Left N N N *		
* Circling Approach	* Circling Approach							

Taxiway B (Bravo) is a full length parallel taxiway serving Runway 6R-24L. This taxiway is 50 feet wide and is located 300 feet south of the runway centerline. There are holding aprons available near each end of the taxiway. Most of Taxiway B is rated in poor condition. Runway 15-33 is used for access to the west end of the runway from Taxiway B, while Taxiway B6 provides access to the east threshold. Taxiways B3 and B5 provide midfield exits from Runway 6R-24L. Each of the these three exit taxiways is 50 feet

wide, and are generally rated in excellent condition.

Taxiway C (Charlie) is a connecting taxiway in the terminal area. It runs parallel to the parallel runways between Taxiways B2 and B4. Taxiway C is 50 feet wide and is rated in very good condition.

Taxiway D (Delta) is a parallel taxiway to crosswind Runway 15-33. It presently extends from beyond the south end of the runway to Runway 6L-

24R. This taxiway provides airfield access to the west side of the terminal area. There are also two holding aprons located along the taxiway to facilitate two-way circulation. Taxiway D is 40 feet wide and the pavement is rated in very good to excellent condition.

Taxiways B2 and B4 are connecting taxiways providing access between the terminal area and the airfield. Taxiway B2 is located in the mid-terminal area and extends from the south parking apron to Runway 6L-24R. Taxiway B2's width varies from 35 feet between the parallel runways to 50 feet between Runway 6R-24L and the hangar area. The taxiway splits into 30 foot-wide dual taxiways in the hangar area. Taxiway B2 is rated in excellent condition in the airfield area, and in good condition in the hangar area.

Taxiway B4 connects the airfield with the west side of the terminal area and extends from Runway 6L-24R to Taxiway C. This taxiway is also 35 feet wide between the parallel runways and 50 feet wide from Runway 6R-24L south into the terminal area. The taxiway pavement is rated in very good to excellent condition.

Airfield Lighting and Marking

The location and presence of an airport at night is universally indicated by an airport rotating beacon. The rotating beacon at Ryan Airfield is located on a tower in the southeast corner of the terminal area, east of Airfield Drive and north of the intersection of Valencia Road and State Route 86. A lighted windsock and a segmented circle are located near midfield between Runway

6R-2L and Taxiway B. The wind sock/segmented circle provide pilots with a visual indication of surface winds as well as the airport traffic pattern.

Runway 6R-24L is currently the only lighted runway. It is equipped with medium intensity runway edge lighting (MIRL) as well as threshold lighting at each runway end. Runway 6R is also equipped with runway end identifier lights (REIL's). REIL's approaching pilots with positive identification of the approach end of the runway. Runway 24L is equipped with four-box visual approach indicators (VASI-4). VASI's are a system of colored lights designed to provide visual descent guidance during a runway approach.

The taxiways at Ryan Airfield are marked with basic taxiway centerline markings and taxiway reflectors. There is no taxiway lighting. Unlighted signs mark the intersections of runways and taxiways.

Navigational Aids

Navigational aids (navaids) provide direction, range, and/or position information to pilots. Navaids are usually classified as either enroute or terminal navaids. The enroute navaids provide point to point navigation while terminal navaids provide approach and landing guidance.

The primary enroute facility for the area is the Tucson (TUS) VORTAC located on Tucson International Airport. A nondirectional beacon (NDB) is located at Ryan Airfield. The Ryan (RYN) NDB can be utilized for to "home

in" on the airport. The Robles (RBJ) NDB is located approximately 12 miles southwest of Ryan Airfield and provides an initial approach fix to the airport.

The Ryan NDB is also used for terminal navigation. The Ryan NDB-D approach is a published circling approach to Ryan Airfield with minimums of 1-1/4 mile visibility and 800 foot AGL (above ground level) cloud ceilings.

This same (overlay) approach can be made with GPS (global positioning system) guidance. GPS is an additional navigational aid available for enroute and terminal navigation. GPS was initially developed by the Department of Defense for military purposes, and has been adapted to civilian uses. GPS uses a group of satellites to transmit signals which properly equipped aircraft can use to determine location, altitude, and speed. Pilots can navigate to virtually any airport in the country using GPS.

Runway 6R is the only runway with published straight-in instrument approaches. The instrument landing system (ILS) provides the best minimums to the airport. The ILS system consists of a localizer for course information, a glide slope for descent information, and marker beacons for distance information. The ILS approach provides minimums of 3/4 mile visibility and 200 foot AGL cloud ceilings.

An NDB/DME approach is also available to Runway 6R using the Ryan NDB and distance measuring equipment (DME) from the Tucson VORTAC. A GPS overlay approach is co-published for this approach. The

minimums for this nonprecision instrument approach are 1 1/4 miles and 900 AGL.

EXISTING TERMINAL AREA FACILITIES

The terminal area at Ryan Airfield is located in the southeast quadrant of the Exhibit 1C depicts the airport. existing facilities. For ease of reference, the terminal area has been divided into four sub-areas delineated by northsouth taxiways and access roads. Area A includes the westernmost facilities between Taxiway D and Aviator Lane. Area B is on east side of Aviator Lane to Taxiway B2. Area C includes facilities east of Taxiway B2 but west of Airfield Drive. Area D involves the easternmost area east of Airfield Drive. following subsections describe the terminal area facilities and tenants.

Airport Administration Building

The Tucson Airport Authority maintains an administration building at Ryan Airfield. The building is located in Area B between the south parking apron and State Route 86. Located inside the security fence, the building is approximately 750 square feet and includes office space used by TAA operations personnel and a small conference room. A vehicle shade port is located immediately west of the building.

Air Traffic Control Tower

The air traffic control tower (ATCT) is located in Area B in the northeast

corner of the north aircraft parking apron. The cab floor height in the tower is 65 feet. A small office/break area is located immediately below the cab. The tower is accessible only by an outside stairwell located on the interior of the structure. There is no elevator. The tower is operated on a contract basis by SERCO. The operating hours are 6:00 a.m. to 8:00 p.m. from April through September and 6:00 a.m. to 6:00 p.m. from October through March.

Airport Business Operators

There are a number of aviation businesses located at Ryan Airfield. Between them, these business provide a wide range of general aviation services including aircraft rental and charter, pilot training, aircraft maintenance, painting, restoration, and manufacturing, avionics, firefighting, and restaurant. The following briefly describes each business.

Air Centers West - Located in Area A, Air Centers West has been a major lessor of hangar, tiedown, and office space at Ryan Airfield since 1983. Air Centers West office building is located on the west side at the north end of Aviator Lane and includes a pilot's lounge and office space.

International Airline Pilot Training- IAPT is a flight school for the beginning training of international airline pilots. The flight school utilizes a 10,000 square foot facility at the south end of Area A. There is also a 10,500 square yard apron adjacent to the building for parking up to 20 single and twin engine piston aircraft used in the flight training.

Air Ventures Plaza - Located in Area C, Air Ventures Plaza is another major lessor of hangar space on the airport. Air Ventures develops, leases, and sells executive hangars as well as condo hangars.

Aircraft Color Design - This aircraft painting business is located in Area B at the north end of Aviator Lane on the east side of the street.

Aircrafters/Windwalker Flying Club - Aircrafters provides major maintenance services for light aircraft, while Windwalkers offers flight instruction and aircraft rental. The business is located in a portion of the large clear span hangar at the north end of Area B.

Alpha Air - Located in a portion of the large clear span hangar at the north end of Area B, Alpha Air is a nonprofit flying club that offers flight instruction.

ARDCO - ARDCO is a contractor for the U.S. Forest Service for aerial firefighting. The company uses C-54 aircraft, the largest aircraft based on the airport. Located in area D, ARDCO used the last remaining World War II hangar until it was destroyed in a storm during the summer of 1998.

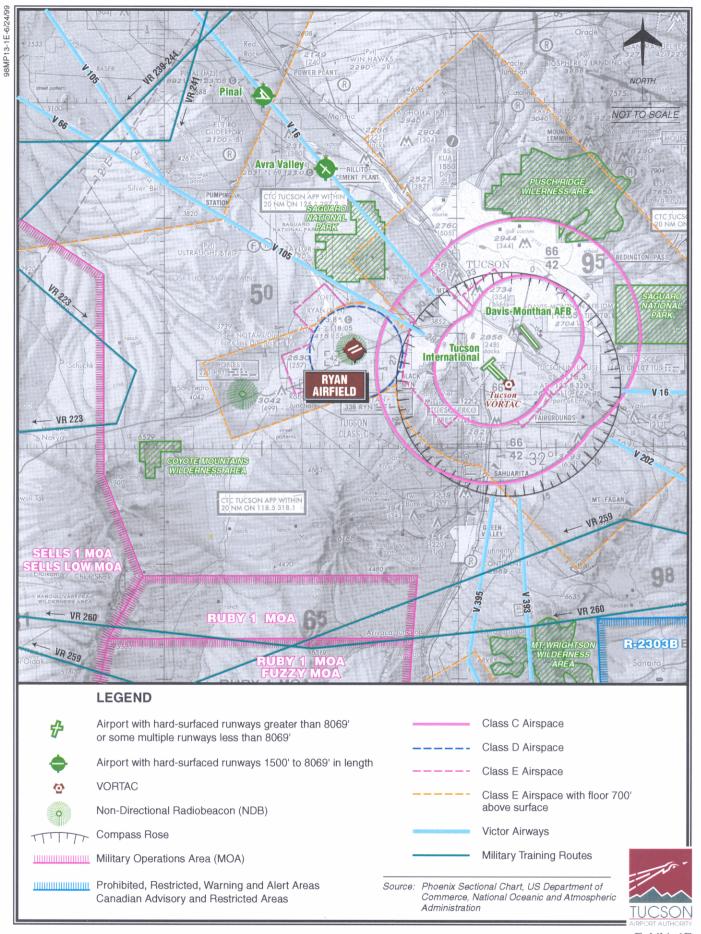
B & M Aircraft - B & M Aircraft is located in a hangar in Area D. The company provides aircraft maintenance services for light aircraft.

Blue Sky Hangars - Located in the central portion of Area A, Blue Sky Hangars provides hangars for aircraft storage and lease to FBO's.

Generally uncontrolled airspace that is not Class A, Class B, Class C,

Class D. or Class E.

CLASS G



Corsair Condos - Corsair Condos is located in the mid-portion of Area B, and provides executive hangars for rent to FBO's and aircraft storage.

E & R Aero - Located in the Area B, E & R Aero provides maintenance for light aircraft.

Goddard Airborne - Flight instruction and aviation research and development are the services provided by Goddard Airborne. The company is located in Area B.

Jim's Aircraft - Maintenance on light aircraft is the business on Jim's Aircraft. It is located in Area A.

Marathon Aircraft - Marathon Aircraft provide aircraft hangar and tiedown storage in Area C.

Mobile Aire Hangars - Located in Area B, Mobile Aire Hangars is another major lessor of aircraft parking and storage. Mobile Aire offers T-hangars, shadeports, and tiedowns.

Snoopy's Flight School - Snoopy's is located in Area A and provides flight instruction, aircraft rental, light maintenance, and pilot's supplies.

Southwest Avionics - Located in Area A, Southwest Avionics provides avionics sales, installation, and service.

Tyconic, Inc. - Tyconic, Inc. offers flight instruction, aircraft rental, light maintenance, and pilot's supplies. It is located in Area A.

Venture Light Aircraft Resources, L.L.C. - Venture Light Aircraft Resources manufactures T211 aircraft. It is located in the north hangar row of Area A.

Wings Restaurant - Wings provides restaurant services at Ryan Airfield. The restaurant is in a 2,400 square foot building near the entrance to Aviator Lane from State Route 86. The restaurant also collects fuel payments for the TAA's self-service fuel facility.

Aircraft Parking Apron

The Tucson Airport Authority maintains two large public parking aprons at Ryan Airfield. Both are located adjacent to Taxiway B2. The north parking apron is closest to the airfield. It covers approximately 12,500 square yards and is used primarily for short term parking. There are 16 marked spaces on the ramp. The 1997 Pavement Management Study rate the apron pavement condition as good.

The ATCT and the aircraft wash rack are located in opposite corners of the ramp. The self-serve, covered wash rack was constructed and is operated by TAA. There is also a small building with rest rooms located next to the ramp.

The other public apron is located immediately north of the restaurant and administration building.

This 24,000 square yard ramp provides parking for 55 aircraft as well as a fuel island. This apron pavement is rated in very good to excellent condition.

Fueling Facilities

The Tucson Airport Authority owns and operates the fueling facilities at Ryan Airfield. The fuel storage and fueling island are located next to the administration building at the south end of the south parking apron. There are two 12,000 gallon underground tanks for 100 low lead (avgas). The fuel comply facilities with Protection Agency Environmental (EPA) and Arizona Department of Environmental Quality (ADEQ) regulations and standards. The fuel island is set up for self-fueling. Patrons pay at the Wings Restaurant, a short walk from the fuel island.

The Airport Authority also has a 1,800 gallon refueller truck for avgas and a 350 gallon truck for unleaded. Truck dispensing is available on a limited basis.

Airport Maintenance/ARFF

The airport maintenance facilities are located on the east side of the terminal area. This includes a maintenance yard, a 2,400 square foot maintenance building, and a vehicle shadeport. **Table 1C** outlines the major vehicle equipment at Ryan Airfield.

The airport rescue and firefighting equipment (ARFF) is stored at the maintenance area as well. The equipment includes one water tender and one dry chemical vehicle. The water tender has a capacity of 1,500 gallons of water and 100 gallons of foam. The dry chemical vehicle has a 2,000 pound capacity. The equipment is

manned by Airport Authority maintenance personnel.

TABLE 1C Ryan Airfield Vehicle List					
TAA#	Description				
207	Briggs and Stratton Riding Mower				
209	1953 Willis Jeep				
211	1962 Mobile Forklift				
213	1956 Caldwell Mower F-56				
219	1975 Mobil Sweeper				
220	1988 GMC ½ Ton Pickup				
228	1H Case Tractor 685XL				
235	1968 International 1,800 gal. Fuel Truck				
237	1962 Ford F250 350 gal. Fuel Truck				
239	Allis Chalmers Grader				
240	1975 Dodge 3/4 Ton Pickup				
241	1968 International Water Tanker				
242	Case Tractor G-118D				
246	1960 International Tractor I-340				
248	1979 Colman Tug				
250	1990 Chevrolet Blazer				
Source: TAA records.					

Security

Ryan Airfield is not an F.A.R. Part 139 certificated airport so strict FAA security standards do not apply. The airport is fenced with four-strand barbed wire on its perimeter. In the terminal area, the hangars and

operations area are separated from the general public by chain link security fencing. All drive-through gates in the terminal area are locked and require a security code to open.

The Tucson Airport Authority police do regular patrols of Ryan Airfield. In addition, the airport has a security committee comprised of tenants and Airport Authority employees that act as a watch group over the airport.

Other Tenants

Other tenants on the airport include a small mobile home park and a solid waste transfer station. There are eight mobile homes remaining in the park located on the east side of Airfield Drive near its intersection with State Route 86. Pima County constructed and operates the solid waste transfer station in the southwest quadrant of the airport. The transfer station is an enclosed facility designed for central collection solid waste for transfer to the county landfill.

Airport Access and Parking

Off-airport access to Ryan Airfield is provided by State Route 86 (Ajo Highway) and Valencia Road. These two roads intersect at the airport which is the west termination point for Valencia Road. Both are two-lane paved rural roadways in the vicinity of the airport. State Route 86 is an eastwest highway that extends from Interstate 19 in Tucson west to Ajo. Valencia Road is an east-west road that extends east from Ryan Airfield through southern Tucson were it runs along the

north side of Tucson International Airport.

There are two primary on-airport access roads. Airfield Drive extends north from the intersection of State Route 86 and Valencia Road to a cul-de-sac next to Taxiway C. This two-lane road provides access for the eastern side of the terminal area.

Aviator Lane provides access to the western portions of the terminal area. The two-lane paved access road has a landscaped median through the terminal area, and extends from State Route 86 to the public parking lot near the north apron.

Automobile parking is provided in several areas of the airport. The paved public parking lot at the north end of Aviator Lane includes 16 spaces. There are also 116 paved parking spaces along the west side of Aviator Lane and approximately 25 marked spaces along the east side of the road. There are 19 paved spaces at Wings Restaurant with room for several more vehicles in unpaved parking areas. There is also unmarked, paved parking available along the west side of Airfield Drive that can accommodate an estimated 60 vehicles. In addition there are several other private parking spaces within the security fence on various leaseholds.

Utilities

The availability and capacity of the utility systems are important in the consideration of airport development opportunities. An eight-inch water line connects the airport with a water main that runs along State Route 86. The

line runs north along Aviator Lane then east to the ARDCO leasehold. Water is supplied by the City of Tucson.

Wastewater is handled by a series of septic systems throughout the airport. The main system has a 12,500 gallon tank. There are also several smaller, individual septic tanks.

Natural gas is supplied to the airport by Southwest Gas in Tucson. Power is provided by two separate utilities. Tri Co. Electric Company serves the west side while Tucson Electric Power serves the east side.

AIRSPACE AND AIR TRAFFIC CONTROL

The FAA Act of 1958 established the FAA as the responsible agency for control and use of navigable airspace within the United States. The FAA has established the National Airspace System (NAS) to protect persons and property on the ground and to establish and efficient safe airspace environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. airspace, including air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; personnel and material. System components shared jointly with the military are also included.

AIRSPACE STRUCTURE

To ensure a safe and efficient airspace system for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the NAS. The U.S. airspace structure provides for categories of airspace and identifies them as Classes A, B, C, D, E, and G. These are depicted on **Exhibit 1D** and described below.

Class A airspace includes all airspace from 18,000 feet MSL to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high activity commercial service airports (i.e. Phoenix Sky Harbor International Airport). Class C airspace is controlled airspace surrounding lower activity commercial service airports and some military airports. Class D airspace is controlled airspace surrounding other airports with an air traffic control tower.

All aircraft operating within Class A, B, C, and D airspace must be in contact with the air traffic control facility responsible for the particular airspace. Class E airspace is controlled airspace that encompasses all instrument approach procedures and low altitude federal airways. Only aircraft conducting instrument flights required to be in contact with air traffic control when operating in Class E Class G airspace uncontrolled airspace. The airspace in the vicinity of Ryan Airfield is depicted on Exhibit 1E.

Ryan Airfield is located under Class D airspace. The Class D airspace extends outward from the airport to a radius of four nautical miles, and from the surface up to 4,200 feet MSL. In addition Class E airspace (from the surface to Class A) extends outward from the radius for the precision

approach to Runway 6R (west) and for the NDB circling approach procedure (northwest).

The outer ring of the Class C airspace for Tucson International Airport (TIA) and Davis-Monthan Air Force Base is located immediately east of Ryan Airfield. The Class C airspace consists of an inner and outer ring. The inner ring extends from the surface to 6,600 feet MSL for five nautical miles from the two airports. The outer ring includes airspace from 4,200 feet to 6.600 feet MSL and extends outward for 10 miles from the airports. A portion of the Class C airspace is immediately above part of the Class D airspace for Ryan Airfield. There is also Class E airspace associated with the approaches to TIA and Davis-Monthan. airspace extends upward from 700 feet above the surface.

For aircraft enroute or departing the Tucson area, there are several Victor airways available. Victor airways are corridors of airspace eight miles wide that extend upward from 3,000 feet above the ground and extend upward to 18,000 feet MSL. The airways run between VOR navigational aids. The Tucson VORTAC is the converging point for Victor airways in the Tucson area.

There are also several Military Operations Areas (MOA's) and restricted areas in the Tucson vicinity. These areas are reserved for military use and serve to delineate areas where flight restrictions are imposed. The closest MOA's to Ryan Airfield are the Ruby 1 MOA located 19 nautical miles south of the airport and the Sells MOA located 22 nautical miles west.

In addition, there are several restricted areas related to national monuments and wilderness areas around the Tucson area. These include the Saguaro National Park to the north of Ryan Airfield, Pusch Ridge Wilderness Area to the northeast, Saguaro National Park to the southeast, and Coyote Mountains Wilderness Area to the southwest. Aircraft are requested to maintain an altitude of at least 2,000 feet AGL over these restricted areas.

AIR TRAFFIC CONTROL

The FAA has established 21 Air Route Traffic Control Centers (ARTCC) throughout the continental United States to control aircraft operating under instrument flight rules (IFR) within controlled airspace and while enroute. An ARTCC assigns specific routes and altitudes along federal airways to maintain separation and orderly traffic flow. The Albuquerque ARTCC located in Albuquerque, New Mexico controls IFR airspace enroute to the Tucson area.

The ARTCC delegates certain airspace to local terminal facilities which assume responsibility for the orderly flow of air traffic arriving an departing major terminals. The Tucson TRACON is charged with the control of the Class C airspace immediately east of Ryan Airfield and provides radar approach and departure control. The Ryan ATCT is charged with the Class D airspace around Ryan Airfield during its operating hours.

OTHER AREA AIRPORTS

As indicated on **Exhibit 1D**, there are several other airfields in the Tucson metropolitan area. There are five other airports in the vicinity that are open to the public, one military base (Davis-Monthan AFB), and approximately five private, restricted use airports. The following briefly describes the five public use airports.

Tucson International Airport (TIA) is located on the south side of Tucson and serves as the commercial service airport for the region with over 3.5 million passengers in 1997. It also is a base for the Arizona Air National Guard. Like Ryan Airfield, TIA is owned by the City of Tucson and operated by the Tucson Airport Authority. The airport has two parallel runways in the 11-29 orientation and a crosswind Runway 3-21. Runway 11L-29R is the longest runway at 10,994 feet x 150 feet and has precision instrument approaches in both directions. Runway 11R-29L is a general aviation runway 9,118 feet x 75 feet. Runway 3-21 is 7,000 feet x 150 feet. The airport had 301 based general aviation aircraft in 1997. There were 142,000 general aviation operations out of 241,000 total operations at TIA in 1997.

Avra Valley Airport is located approximately eighteen miles northwest of the Tucson central business district (CBD). The airport is located within the boundaries of Town of Marana, but is owned and operated by Pima County. Avra Valley Airport has two paved runways. The primary Runway 12/30 is 6,901 feet x 100 feet while the crosswind Runway 3/21 is 4,200 feet x 75 feet. Like Ryan Airfield, Avra Valley

Airport is designated as a reliever airport for the Tucson metropolitan area and has 217 based aircraft and an estimated 71,300 annual operations.

La Cholla Airpark is located approximately 15 miles north of the Tucson CBD in unincorporated Pima County. The airpark is owned by a private homeowners association. The single paved Runway 1-19 is 4500 feet x 35 feet. The airport has 93 based aircraft.

Pinal Airpark is located approximately 30 miles northwest of the Tucson CBD, just north of the Pima/Pinal County line. The airport is owned by Pinal County is operated on a long term lease by Evergreen Air Center, Inc. Pinal airpark has a single paved Runway 12/30 which is 6,860 feet x 150 feet. The are four based civilian aircraft. The Arizona Army National Guard is located on the airport with 79 based helicopters.

Sells Airport, located approximately 60 miles west of Tucson, is the closest airport to the west of Ryan Airfield. This airport is owned and operated by the Tohono O'odham Indian tribe. The airport has a single, paved Runway 4-22 that is 5,830 feet x 60 feet. There is one aircraft based at Sells Airport.

COMMUNITY PROFILE

A community profile provides a general look at the socioeconomic make-up of the community that utilizes an airport. It also provides an understanding of the dynamics for growth and the potential changes that may affect aviation demand. Aviation demand forecasts are

normally directly related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time. Current demographic and economic information was collected from several local, state and federal sources.

POPULATION

The Tucson Metropolitan Statistical Area (MSA) has been among the fastest growing MSA's in the nation. After increasing at over four percent annually in the 1970's the area's population has still increased at over 2.4 percent annually since 1980. **Table 1D** presents the population trends for the Tucson MSA (Pima County) and the City of Tucson.

TABLE 1D Tucson Area Population Trends							
Year	City of Tucson	Annual % Growth	Pima County	Annual % Growth	Tucson % of Pima County		
ACTUAL							
1960	212,892	N/A	265,660	N/A	80		
1970	262,933	2.1%	351,666	2.8%	75		
1980	330,537	2.3%	531,433	4.2%	62		
1990	405,390	2.1%	666,880	2.3%	61		
1997	458,676	2.1%	799,834	2.6%	58		
FORECAST	ŗ						
2000	474,467	0.8%	854,329	2.2%	56		
2005	508,521	1.4%	943,795	2.0%	54		
2010	540,307	1.2%	1,031,623	1.8%	53		
2020	589,899	0.8%	1,206,244	1.6%	49		
		ing Department,		<u> </u>	1		

As a rapidly growing area, Tucson has long shown a positive in-migration. In fact, the long term ratio of in-migration to out-migration is three to two. Over 29 percent of all households have been in their present homes less than 15 months. Over sixty percent have been in their present homes less than five years. Twenty-three percent of new households moved here to accept a new job. Newly retired migrants are a growing percentage of all migrants.

The median age in Pima County has risen from 32.8 to 34 since 1990. This can be attributed more to the aging of the "baby boomer" generation rather than to the migration of senior citizens. Much of the population growth over the next twenty years is anticipated to be spurred by working age persons migrating to Tucson for employment opportunities.

EMPLOYMENT

Tucson is the home of Optics Valley and is a fast-growing center for science and industry in fields such as aerospace, software development, bio-industry, environmental technology, and teleservices. Tucson is also a leading health services center of the Southwest, the astronomy capital of the world, and home of the University of Arizona, and a tourism destination.

Table 1E presents the MSA employment by sector between 1970 and 1995. In 1970, government was the largest employer with 25 percent of total employment. In 1995 government was third, however, making up 17 percent of employment. Services is the largest employment sector at 34 percent compared to just 22 percent in 1970. Retail trade is now second largest at 18 percent.

Tucson MSA Employment by Sector								
	1970	1980	1990	1995	Annual % Growth			
Farm	1,090	930	1,050	1,020	-0.0			
Agricultural Services	970	1,880	3,330	4,360	6.2			
Mining	6,970	6,920	2,700	2,780	-3.6			
Construction	11,060	16,710	18,840	24,440	3.2			
Manufacturing	9,290	22,060	28,200	30,340	4.8			
Trans., Comm., Util.	5,870	8,960	10,150	15,150	3.9			
Wholesale Trade	3,510	6,130	8,750	11,370	4.8			
Retail Trade	25,340	40,840	60,380	68,260	4.0			
Finance, Ins., Real Estate	10,970	21,520	28,280	27,090	3.7			
Services	32,444	59,931	105,130	127,780	5.6			
Government	36,770	49,410	58,650	65,810	2.4			
Total	144,280	235,290	325,460	378,400	3.9			

Manufacturing and wholesale trade have averaged annual growth rates of 4.8 percent over the 25 year period. Only mining and farm employment have declined since 1970. As a part of the services sector, tourism is accountable for approximately 37,000 or one of every 10 jobs in the Tucson area, adding over \$1.5 billion annually to the economy.

Table 1F lists the fifteen largest private employers in the Tucson area. Raytheon missile systems is the largest private employer in the area with 7,300 employees. There are thirteen private companies who employ over 1,000 persons in Tucson.

TABLE 1F
Top Private Employers
Tucson Metropolitan Area

	Employer	Type of Business	Employees
1.	Raytheon Missile Systems Co.	Tactical & strategic defense missile systems	7,300
2.	Carondelet Health Care	Integrated health care delivery network	3,763
3.	TMC Health Care	Health care	3,525
4.	BHP Copper	Copper mining	3,100
5.	ASARCO, Inc.	Copper mining	2,655
6.	Phelps Dodge Corp.	Copper mining	2,500
7.	University Medical Ctr.	Hospital	2,300
8.	American Airlines	Reservation center	1,250
9.	IBM Storage Systems Division	Development of storage products	1,198
10.	TeleTech	Customer service center	1,167
11.	Tucson Electric Power Company	Electric utility	1,148
12.	Burr-Brown Corp.	Semiconductor manufacturing	1,083
13.	First Data Corp. Teleservices Division	Telecommunications	1,030
14.	Weiser Lock	Manufacturer of lock systems	997
15.	Bombardier/Learjet, Inc.	Aircraft maintenance, refurbishment and completion of business jet aircraft	950

st Ranked by number of local full-time equivalent employees, excluding retail employers

Source: Greater Tucson Economic Council.

INCOME

Table 1G compares the per capita personal income (PCPI) for the Tucson MSA, the state of Arizona, and the

United States since 1970. The MSA has slightly trailed the state in PCPI over the years. Both have been lower than the United States average over the time span as well.

TABLE 1G	
Per Capita	Personal Income
1970-1995	

	1970	1980	1990	1995
Tucson MSA	3,808	8,968	15,671	19,555
Arizona	3,801	9,328	16,538	20,073
United States	4,069	10,038	19,142	23,196

Source: U.S. Department of Commerce, Regional Economic Information System (REIS).

Arizona ranked 37th among the states in PCPI in 1995. This is down from 31st in 1980 and 27th in 1970. Pima County's (Tucson MSA) PCPI ranks second among counties in the state.

EDUCATION

The Tucson area has a wide range of education opportunities available beginning with the University of Arizona. There are over 33,000 students enrolled at the university in its 14 colleges and six independent programs.

Pima County Community College is the fifth-largest multi-campus community college in the nation with five campuses, 100 satellite facilities, and over 53,000 students enrolled. The community college offers more than 3,000 courses in 69 areas, and also customizes training for area businesses. In addition, there are several private institutions of higher learning in the Tucson area.

There are over 120,00 students enrolled in Pima County public schools. The greater Tucson area has 12 school district and over 184 schools from kindergarten through 12th grade. There are also numerous private and parochial elementary and secondary schools available.

TOURISM

As indicated earlier, tourism accounts for over 10 percent of the employment in the Tucson area. This is due in part, to the outstanding weather and the unique Sonoran Desert landscape. The Tucson area offers a number of outdoor activities such as hiking, golf, camping, and horseback riding. Saguaro National Monument, the Coronado National Forest, and other outdoor areas attract millions annually.

The clear skies have also made the Tucson area a mecca for exploring air and space. Kitt Peak National Observatory, the Flandrau Planetarium, the Biosphere II Center, and Pima Air and Space Museum are among the attractions.

In addition, Tucson has a rich cultural heritage dating back to 18th century origins that is seldom found in modern cities. This is reflected in local arts, restaurants, community events, and the architecture.

DOCUMENT SOURCES

A variety of different documents were referenced in the inventory process. The following listing reflects a partial compilation of these sources. The listing does not include the data provided directly by the Tucson Airport Authority staff or airport drawings which were referenced for information. An on-site inventory was also conducted to review the existing facilities for the master planning effort.

Airport Facility Directory, Southwest United States; U.S. Department of Commerce, National Oceanic and Atmospheric Administration, October 8, 1998 Edition.

Phoenix Sectional Aeronautical Chart; U.S. Department of Commerce, National Oceanic and Atmospheric Administration, May 21, 1998.

Regional Economic Information System; U.S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis, Regional Economic Measurement Division. Regional Aviation System Plan Update; Pima Association of Governments, Airport Technology and Planning Group, Inc., February, 1995.

Ryan Airfield Airport Master Plan; Tucson Airport Authority, Coffman Associates, July 1990.

Ryan Airfield Treatment Management Program Update; Appendix C, Tucson Airport Authority, Pavement Consultants, Inc. August, 1997.

U.S. Terminal Procedures, Southwest, Volume 1 of 2; U.S. Department of Commerce, National Oceanic and Atmospheric Administration, October 8, 1998 Edition.

The following Web pages were also visited for information during the preparation of the inventory:

www.airnav.com www.ci.tucson.az.us www.futurewest.com www.tucsonairport.org